

REMARKS/ARGUMENTS

The Final Office Action of November 9, 2004, has been carefully reviewed and these remarks are responsive thereto. Reconsideration and allowance of the instant application are respectfully requested. Claims 1-15 and 18-21 remain pending in this application. Applicant has not amended the claims in this response but has provided a copy of the pending claims for the examiner's convenience.

This paper is submitted in response to a call between the Examiner and Mr. Dannenberg on January 31, 2005. Applicant thanks the Examiner for extending the courtesy of the telephonic interview.

Claim Rejections – 35 U.S.C. § 102

Claims 1, 3-15, and 18-21 stand rejected under 35 U.S.C. § 102(e) as being anticipated by *Barany et al.*, Pub. No. U.S. 2003/0189900A1 (*Barany '900*). Applicant respectfully traverses this rejection.

The filing date accorded to the published application, *Barany '900*, is May 4, 2001, more than four months after the filing of the present application. The Action appears to rely on the May 26, 2000, filing date of provisional application No. 60/207,622 (hereinafter “provisional application”), from which the *Barany '900* claims priority, to qualify it as prior art under section 102(e). Thus, in order to anticipate the claims of the present application, any subject matter cited in the *Barany '900* published application must be fully supported (i.e. disclosed) in the provisional application. Applicant previously argued that the provisional application fails to provide support for substantial material cited in the Office Action. However, the Action apparently misunderstood Applicant's arguments, because the Final Office Action again cites *Barany '900* in rejecting the pending claims. *Barany '900*, however, is not supported by the provisional application. As a result, portions of the subject matter relied upon in the *Barany '900* published application are not prior art, and therefore do not preclude patentability under 35 U.S.C. § 102(e).

Claim 1 recites in relevant part:

assigning, by the ingress GSN, a label to at least a portion of the data according to the traffic class to provide labeled data; and

routing, by the ingress GSN to an egress GSN of the plurality of GSNs, the labeled data through a first delay-differentiated path of the plurality of delay-differentiated paths based on correspondence of the label to the first delay-differentiated path.

The Office Action alleges that *Barany* '900 discloses "assigning, by the ingress GSN, a label to at least a portion of the data according to the traffic class" at page 4-5, ¶¶ 43-47 in the published application. The Office Action further contends that "provid[ing] labeled data" is shown at page 6, ¶¶ 61-62 where "each traffic class is metered and marked/label [sic] by the appropriate PHB to form/provide PHB label/level packet." Still further, the Action responds to Applicant's response of August 16, 2004, by reciting portions of the *Barany* '900 published application and not the corresponding support from the *provisional application*. For convenience of reference, Applicant submits a copy of the *provisional application*, Appl. Serial No. 60/207,622, as Appendix A.

Applicant submits that the *provisional application* does not disclose, teach or suggest "assigning, by the ingress GSN, a label to at least a portion of the data according to the traffic class to provide labeled data" as recited in claim 1. The *provisional application* at most shows that a mobile station or landline PC telephone can set a DiffServ DS field based on QoS requirements (see provisional application at p. 4). That is not what is recited in the claim. As a result, because the *provisional application* does not support the subject matter relied upon in the *Barany* '900 published application, the subject matter is not prior art, and the rejection should be withdrawn. Claims 2-9 depend from claim 1 and are also allowable for substantially the same reasons, and further in view of additional reasons discussed below.

Claim 7 recites:

The method of claim 6, wherein each of the plurality of traffic classes has a unique correspondence to one of a plurality of per-hop behavior (PHB) groups, further comprising a step of:

assigning, by the ingress GSN, a PHB group of the plurality of PHB groups to the labeled data based on the traffic class,

wherein the step of handling further comprises handling the labeled data according to the per-hop behavior group assigned to the labeled data.

The Office Action alleges that *Barany '900* shows each feature of claim 7. Applicant submits that the *provisional application* fails to teach or disclose a method “wherein each of the plurality of traffic classes has a unique correspondence to one of a plurality of per-hop behavior (PHB) groups” as recited in the claim. The *provisional application* does show PHB groups, but it does not teach or suggest “a plurality of traffic classes ha[ving] a unique correspondence to one of a plurality of [PHB] groups” as recited in the claim. Moreover, the *provisional application* fails to teach or suggest “assigning, by the ingress GSN, a PHB group . . . based on the traffic class” as recited in claim 7. The *provisional application* shows only setting a DS Field by a mobile station or landline PC telephone. Accordingly, claim 7 is allowable for this additional reason.

Claim 8 recites:

wherein the plurality of traffic classes comprises conversational, streaming, interactive and background traffic classes, and wherein the conversational class corresponds to an Expedited Forwarding PHB group, the streaming class corresponds to a First Assured Forwarding (AF1) PHB group, the interactive class corresponds to a Second Assured Forwarding (AF2) PHB group and the background class corresponds to a Third Assured Forwarding (AF3) PHB group.

Applicant submits that the *provisional application* fails to provide any reference to an “Expedited Forwarding PHB group,” a “First Assured Forwarding PHB group,” a “Second Assured Forwarding (AF2) PHB group,” or a “Third Assured Forwarding (AF3) PHB group” as recited in claim 8. In fact, the *provisional application* makes no reference whatsoever to any type of “Forwarding PHB group” as recited in claim 8. Accordingly, claim 8 is allowable for at least this additional reason.

Claim 10 recites in relevant part:

assigning, by the ingress GSN, a per-hop behavior (PHB) group of a plurality of PHB groups to the data based on the traffic class,
transmitting, by the ingress GSN, a portion of the data to one of the plurality of intermediate nodes; and
handling, by the one of the plurality of intermediate nodes, the portion of the data based on the PHB group

The Office Action alleges that the *Barany '900* published application shows “assigning, by the ingress GSN, a per-hop behavior (PHB) group of a plurality of PHB groups to the data based on the traffic class” at pages 4-5 ¶¶ 43 and 47, and at page 6, ¶¶ 61-62. Like before, the *provisional application* upon which the rejection relies does not provide any disclosure or support for this subject matter. Although the *provisional application* shows PHB groups, it does not teach or otherwise suggest “assigning, by the ingress GSN, a per-hop behavior (PHB) group to the data based on the traffic class” as recited in claim 10. More specifically, the *provisional application* fails to disclose that PHB groups are based on a traffic class, and it also fails to show that PHB groups are assigned by an ingress GSN.

Because the *provisional application* does not support the subject matter relied upon in the *Barany '900* published application, the subject matter is not prior art, and the rejection of claim 10 should be withdrawn. Claims 11-15 depend from claim 10 and are also allowable for substantially the same reasons, and further in view of additional reasons provided below.

Claim 12 recites:

The method of claim 10, wherein the plurality of traffic classes comprises conversational, streaming, interactive and background traffic classes, and wherein the conversational class corresponds to an Expedited Forwarding PHB group, the streaming class corresponds to a First Assured Forwarding (AF1) PHB group, the interactive class corresponds to a Second Assured Forwarding (AF2) PHB group and the background class corresponds to a Third Assured Forwarding (AF3) PHB group.

Applicant submits that claim 12 is allowable for substantially similar reasons as discussed in connection with claim 8 above.

Claim 18, as amended, recites:

An improved General Packet Radio Service (GPRS) network of the type comprising a plurality of GPRS Support Nodes (GSNs) in communication with each other via an Internet Protocol (IP)-based network comprising a plurality of intermediate nodes, wherein the improved GPRS network is capable of supporting a plurality of traffic classes, the improvement comprising:

at least one Serving GPRS Support Node (SGSN) and at least one Gateway GPRS Support Node (GGSN) having a plurality of delay-differentiated paths within the IP-based network between each of the at least one SGSN and each of the at least one GGSN, wherein

each of the plurality of traffic classes has at least one delay-differentiated path of the plurality of delay-differentiated paths corresponding thereto, wherein each of the at least one SGSN and each of the at least one GGSN further function to assign a per-hop behavior (PHB) group of a plurality of PHB groups to data belonging to a traffic class of the plurality of traffic classes, wherein the intermediate nodes handle the data according to the PHB group.

Applicant submits that the *provisional application* fails to teach or otherwise suggest “at least one SGSN ... assign[ing] a per-hop behavior (PHB) group” as recited in the claim. The *provisional application* does not teach or otherwise disclose what, if anything, assigns a PHB Group to data. Therefore, it cannot anticipate claim 18. Accordingly, claim 18 is allowable, and Applicant requests that the rejection be withdrawn. Claims 19 and 20 depend from claim 18 and are also allowable for substantially the same reasons.

Applicant submits that claim 21 is allowable for substantially similar reasons as discussed above in connection with claim 1. As such, for substantially similar reasons, the provisional application fails to teach or suggest all of the features of Applicant’s claim 21. Accordingly, claim 21 is allowable, and Applicant requests that the rejection be withdrawn.

Claim Rejections – 35 U.S.C. § 103

Claim 2 stands rejected as being unpatentable over *Barany* ‘900 in view of *Gibson*, U.S. Pat. No. 6,680,943 (“*Gibson*”). With respect to claim 2, Applicant submits that this claim is allowable for substantially the same reasons discussed in connection with claim 1 above.

CONCLUSION

It is believed that no fee is required for this submission. If any fees are required or if an overpayment is made, the Commissioner is authorized to debit or credit our Deposit Account No. 19-0733 accordingly.

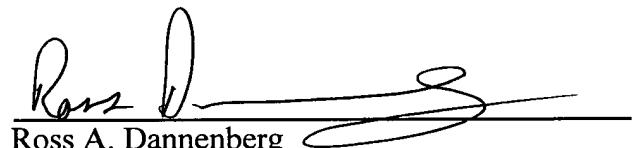
All rejections having been addressed, Applicants respectfully submit that the instant application is in condition for allowance, and respectfully solicits prompt notification of the same.

Respectfully submitted,

BANNER & WITCOFF, LTD.

Dated: February 9, 2005

By:


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APPENDIX A
(Copy of U.S. Provisional Patent Application No. 60/207,622)
(Printed from U.S. Patent and Trademark Office Website –
Patent Application Internet Retrieval Portal – 19 pages)

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10809 U.S. PTO
60/207622
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<input type="checkbox"/> Additional inventors are being named on the _____ separately numbered sheets attached hereto		
TITLE OF THE INVENTION (280 characters max)		
RESOURCE ALLOCATION METHOD AND APPARATUS FOR SUPPORTING WIRELESS IP NETWORKS		
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<input type="checkbox"/> Customer Number	021498	<input type="checkbox"/> Place Customer Number Bar Code Label here
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<input checked="" type="checkbox"/> Firm or Individual Name	Mr. John D. Crane, Esq.	
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ENCLOSED APPLICATION PARTS (check all that apply)		
<input checked="" type="checkbox"/> Specification Number of Pages	17	<input type="checkbox"/> Small Entity Statement
<input type="checkbox"/> Drawing(s) Number of Sheets		<input type="checkbox"/> Other (specify) _____
METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT (check one)		
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Respectfully submitted,

SIGNATURE

Date 05/26/2000

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Docket Number: 12612RRUS01P

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PAT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT APPLICATION

In re Application of:

O I P E
FEB 09 2005
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PATENT & TRADEMARK OFFICE
Serial No: Peter Barany, et al. Atty. Docket: 12612RRUS01P
Filed: Unknown Art Unit: Unknown
For: May 26, 2000 Examiner: Unknown
RESOURCE ALLOCATION METHOD Date: May 26, 2000
AND APPARATUS FOR SUPPORTING
WIRELESS IP NETWORKS

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Respectfully submitted,

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Date: May 26, 2005
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Provisional Patent Application

For



Resource Allocation Method and Apparatus for Supporting Wireless IP Networks

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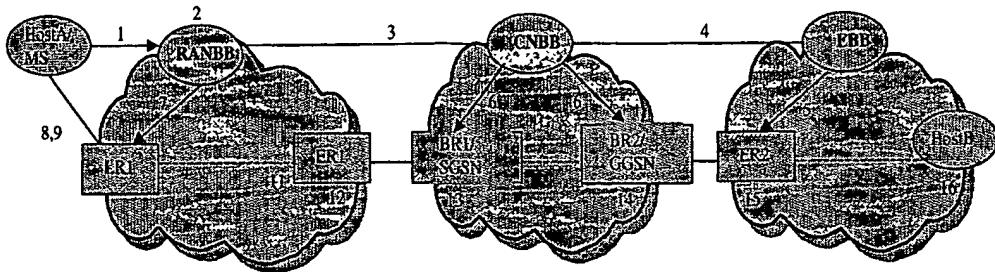
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Summary of the Invention

A resource allocation mechanism for supporting a wireless IP network is presented herein. A plurality of bandwidth brokers are provided for receiving requests from mobile stations. The mobile stations request the assignment of network resources meeting the requirements of the mobile station such as but not limited to the assignment of data path bandwidth. The bandwidth brokers couple to the data transmission network which responds to the request for assignment of network resources by assigning them for availability for supporting the mobile station requesting service. Once the resources of the network are allocated, the mobile station is notified of the resource availability so the data transfer can start from the mobile to the network.

A further aspect of the invention involves the utilization of a portion of the IP header for each packet for identifying the quality of service being requested by the mobile.

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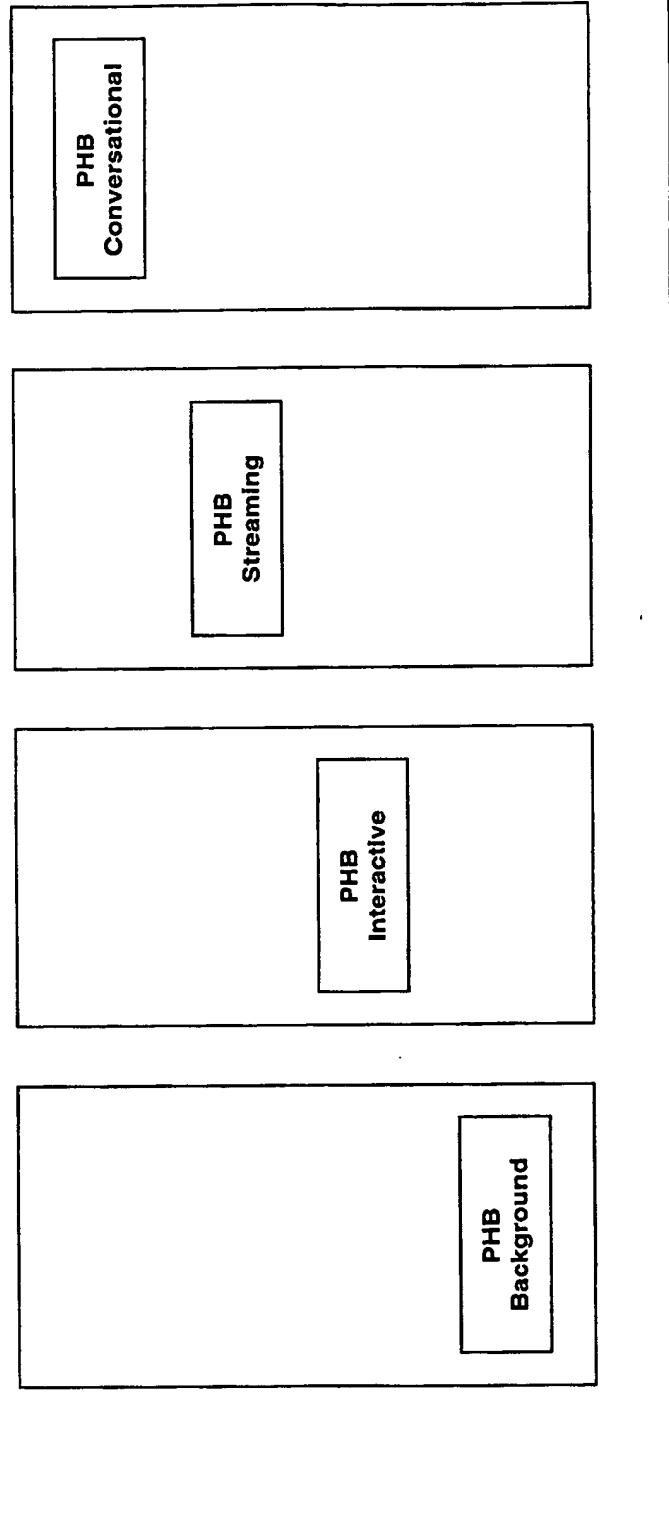


1. MS/Host-A sends a RSVP PATH message to the Radio Access Network Bandwidth Broker (RANBB)
Note that this bandwidth broker includes information specific to access network e.g. UMTS, EDGE etc.
2. RANBB makes an admission control decision. If the request is denied, an error message is sent back to Host-A. In this case, the signaling process ends at this point.
3. If the request is accepted by RANBB, it sends the RSVP PATH message to Core Network Bandwidth Broker (CNBB).
4. CNBB makes an admission control decision. If the request is denied, an error message is sent back to RANBB, which then informs Host-A on rejection of admission control by CNBB. If the request is accepted, CNBB sends the path message to an External Bandwidth Broker (EBB) based on the network configuration. Note that there may be one or more than one EBBs. In that case RSVP PATH message will traverse through all these EBBs.
5. If EBB is a Bandwidth Broker for Host-B, then EBB configures the classification and policing rules on Router-ER2. EBB then sends an RSVP RESV message to CNBB.
6. When CNBB receives the RSVP RESV message, it will configure the classification and policing rules on Router-BR1, and the policing and reshaping rules on router BR2. It will then send the RSVP RESV message to RANBB.
7. When RANBB receives the RSVP RESV message, it will set the classification and shaping rules on router LR1 so that the traffic of the admitted flow is non-conformant, LR1 can shape it. Note that LR1 and ER1 can be same router or different routers depending on the network configuration of the radio network. RANBB will also set the policing and reshaping rules on router ER1. CNBB will then send the RSVP RESV message to Host-A.
8. When Host-A receives the RSVP RESV message, it can start transmitting data.
9. Host S Sends packets to router LR1.
10. Router LR1 performs classification. In case of non-conformant packets, LR1 also performs shaping.
11. Each intermediate router between leaf router LR1 and ER1 performs classification, puts the packet in to correct egress queue and send them out.
12. ER1 performs classification and reshapes the traffic to make sure that the negotiated peak rate is not exceeded. Reshaping is done for the aggregation of all flows heading toward BR1 and not for each individual flow.
13. BR1 classifies and polices the traffic. If necessary excess packets might get dropped.
14. Intermediate routers between router BR1 and BR2 perform classification and reshaping of the traffic is done.
15. BR2 classifies and polices the traffic. If necessary excess packets might get dropped.
16. Packets are delivered to Host-A

Per-Hop Behavior (PHB) Groups

VolP telephony using
GSM AMR codec

Importance



PHB
Conversational

PHB
Streaming

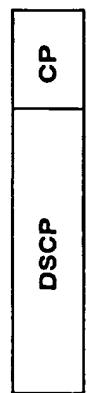
PHB
Interactive

PHB
Background

Urgency

DiffServ Code Point (DSCP) Field and DiffServ Mechanisms

Structure of DiffServ Field



0 1 2 3 4 5 6 7

GSM AMR Full-Rate Speech Codec (8 Modes)

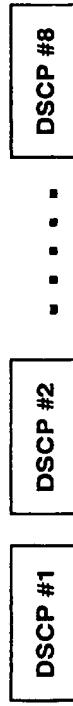
12.2 kbps	7.95 kbps
10.2 kbps	7.40 kbps
7.95 kbps	6.70 kbps
7.40 kbps	5.90 kbps
6.70 kbps	5.15 kbps
5.90 kbps	4.75 kbps
5.15 kbps	
4.75 kbps	

GSM AMR Half-Rate Speech Codec (6 Modes)

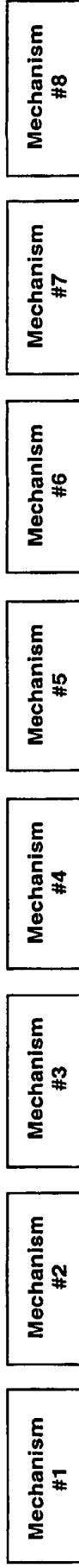
12.2 kbps	7.95 kbps
10.2 kbps	7.40 kbps
7.95 kbps	6.70 kbps
7.40 kbps	5.90 kbps
6.70 kbps	5.15 kbps
5.90 kbps	4.75 kbps



DSCP #1 through #8 map to 8 modes for GSM AMR Full-Rate



Mechanisms #1 through #8 map to GSM AMR speech codec rates 12.2 kbps down to 4.75 kbps



Procedure

- **Procedure 1**

- For wireless or wireline VoIP telephony GSM AMR speech codec, a mobile station or landline PC telephone synthesizes speech at different codec rates (e.g., 12.2 kbps down to 4.75 kbps) every 20 msec.

- **Procedure 2**

- The synthesized speech is then placed into a Real-Time Protocol (RTP) (see IETF RFC 1889) payload. Based upon the speech codec rate (i.e., 12.2 Kbps down to 4.75 Kbps), the RTP payload will contain more or less octets (where 1 octet consists of 8 bits).

- **Procedure 3**

- The RTP header and payload are then placed into a UDP packet (consisting of a UDP header and payload).

- **Procedure 4**

- The UDP header and payload are then placed into an IP packet (consisting of an IP header and payload).



Procedure (continued)

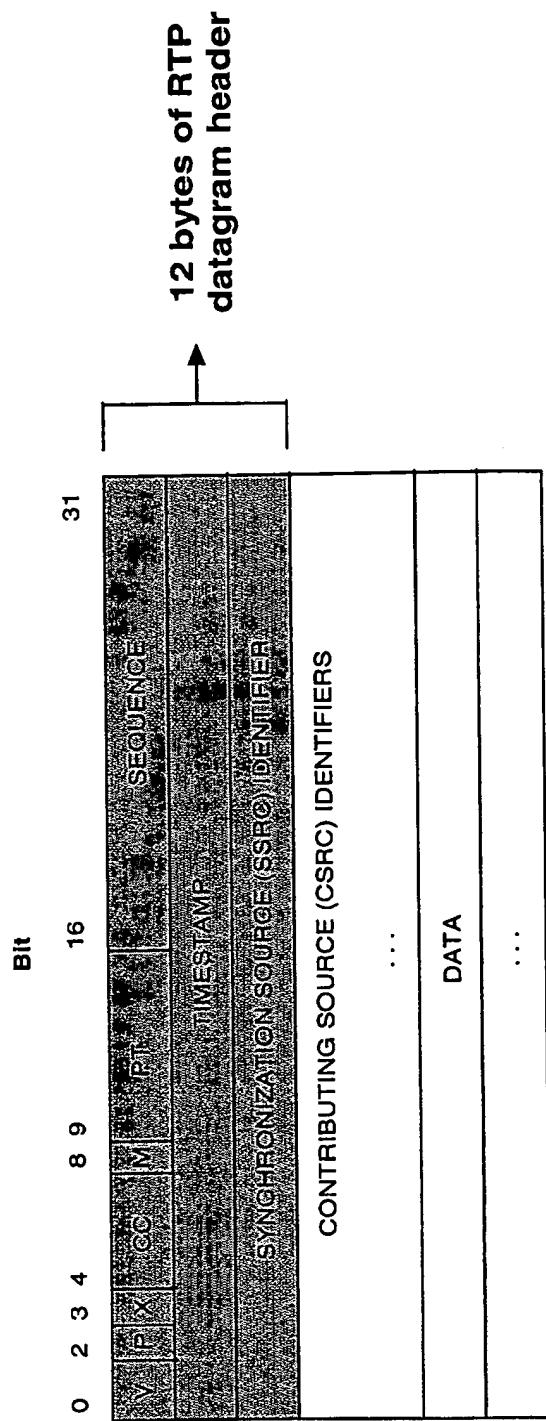
• Procedure 5

- The IP header consists of a DiffServ DS Field (see RFC 2472). The mobile station or landline PC telephone will then set the DiffServ DS Field based upon its Quality of Service (QoS) requirements.
 - PHB Conversational
 - DSCP #1 through #8 for GSM AMR Full-Rate
 - Mechanisms #1 through #8 based on speech codec rate
 - DSCP #9 through #14 for GSM AMR Half-Rate
 - Mechanisms #1 through #8 based on speech codec rate
 - NOTE: QoS for UMTS typically will consist of the following: (1) precedence; (2) delay; (3) reliability; (4) peak throughput; (5) mean throughput.
 - For VoIP telephony, QoS (1), (2), and (3) will typically be "fixed" throughout a flow (i.e., VoIP telephony will constantly require the highest precedence, the shortest delay, and the highest reliability). However, since the VoIP telephony is using GSM AMR speech codec, both QoS (4) and (5) can change on a per IP packet basis.

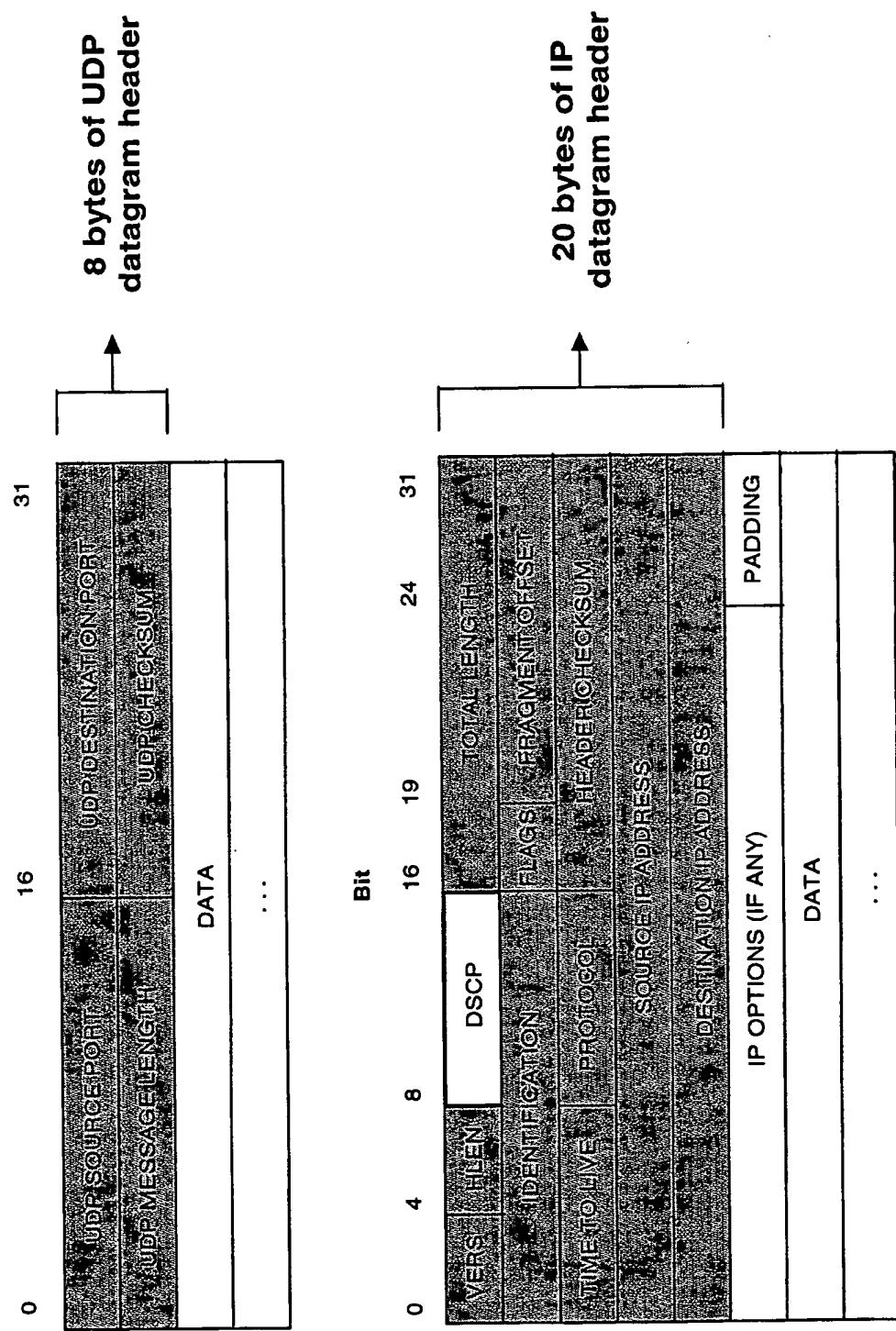
Procedure (continued)

- **Procedure 6**
 - Mobile station or landline PC telephone sets the DiffServ DS Field appropriately, based upon the rate of GSM AMR codec.
- **Procedure 7**
 - Base station and edge router (e.g., GGSN) reads the DiffServ DS Field in the IP header and can optimally classify and condition the real-time (VoIP telephony) packet data traffic with other best-effort packet data traffic or other real-time (VoIP telephony) packet data traffic.
 - Done via Bandwidth Broker (BB).

RTP Datagram



UDP/IP Datagrams



GPRS Quality of Service (QoS) Profile in GSM Release 1999

- Precedence class.
- Delay class.
- Reliability class.
- Peak throughput class.
- Mean throughput class.

Precedence Class

Precedence	Precedence Name	Interpretation
1	High priority	Service commitments shall be maintained ahead of Precedence classes 2 and 3.
2	Normal priority	Service commitments shall be maintained ahead of Precedence classes 3.
3	Low priority	Service commitments shall be maintained after Precedence classes 1 and 2.

Delay Class

Delay Class	Delay (maximum values)		
	SDU size: 128 octets	SDU size: 1024 octets	95 Percentile Delay (sec)
Mean Transfer Delay (sec)	95 Percentile Delay (sec)	Mean Transfer Delay (sec)	95 Percentile Delay (sec)
1. (Predictive)	< 0.5	< 15	< 22
2. (Predictive)	< 5	< 25	< 75
3. (Predictive)	< 50	< 250	< 375
4. (Best Effort)		Unspecified	

NOTE: Delay Class will have to be changed to support real-time services such as VoIP telephony.

Reliability Class

Reliability Class	GTP Mode	LLC Frame Mode	LLC Data Protection	RLC Block Mode	Traffic Type
1	Acknowledged	Acknowledged	Protected	Acknowledged	Non real-time traffic, error-sensitive application that cannot cope with data loss.
	Unacknowledged	Acknowledged	Protected	Acknowledged	Non real-time traffic, error-sensitive application that can cope with infrequent data loss.
2	Unacknowledged	Unacknowledged	Protected	Acknowledged	Non real-time traffic, error-sensitive application that can cope with data loss, GMM/SM, and SMS.
	Unacknowledged	Unacknowledged	Protected	Unacknowledged	Real-time traffic, error-sensitive application that can cope with data loss.
3	Unacknowledged	Unacknowledged	Protected	Unacknowledged	Real-time traffic, error-sensitive application that can cope with data loss.
	Unacknowledged	Unacknowledged	Unprotected	Unacknowledged	Real-time traffic, error-sensitive application that can cope with data loss.
4	Unacknowledged	Unacknowledged	Unprotected	Unacknowledged	Real-time traffic, error-sensitive application that can cope with data loss.
5	Unacknowledged	Unacknowledged	Unprotected	Unacknowledged	Real-time traffic, error-sensitive application that can cope with data loss.

Peak Throughput Class

Peak Throughput Class*	Peak Throughput in Octets per Second
1	Up to 1000 (8 kbit/s)
2	Up to 2000 (16 kbit/s)
3	Up to 4000 (32 kbit/s)
4	Up to 8000 (64 kbit/s)
5	Up to 16000 (128 kbit/s)
6	Up to 32000 (256 kbit/s)
7	Up to 64000 (512 kbit/s)
8	Up to 128000 (1024 kbit/s)
9	Up to 256000 (2048 kbit/s)

*Measured at G1 and R reference points.

Mean Throughput Class

Mean Throughput Class*	Mean Throughput in Octets per Hour
1	Best effort
2	100 (~0.22 bit/s)
3	200 (~0.44 bit/s)
4	500 (~1.11 bit/s)
5	1000 (~2.2 bit/s)
6	2000 (~4.4 bit/s)
7	5000 (11.1 bit/s)
8	10000 (~22 bit/s)
9	20000 (~44 bit/s)
10	50000 (~111 bit/s)
11	100000 (~0.22 kbit/s)
12	200000 (~0.44 kbit/s)
13	500000 (~1.11 kbit/s)
14	1000000 (~2.2 kbit/s)
15	2000000 (~4.4 kbit/s)
16	5000000 (11.1 kbit/s)
17	10000000 (~22 kbit/s)
18	20000000 (~44 kbit/s)
19	50000000 (~111 kbit/s)

*Measured at G1 and R reference points.

WHAT IS CLAIMED IS:

1. A resource allocation mechanism for supporting wireless IP networks comprising, in combination:
 - at least one bandwidth broker for receiving requests for service from a mobile station and requesting end-to-end network resources for transferring data received from the mobile station according to the needs of the mobile station; and
 - data transmission network responsive to the bandwidth brokers for reserving data transmission capacity meeting the mobile station needs for service, once those requirements are reserved, notification is sent to the bandwidth brokers which is in turn send a bandwidth available notice to the mobile station.
2. The resource allocation mechanism of Claim 1 wherein Quality of Service requests by the mobile station are transmitted as part of the IP Header on each packet of data sent over the IP network.

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